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From: Vertical Flight Human Factors Program Manager, AAR-100

To: Vertical Flight TCRG

Subj: VERTICAL FLIGHT HUMAN FACTORS SECOND QUARTER '04 REPORT

Ref: Vertical flight human factors execution plans (<http://www.hf.faa.gov/vffunded.htm>)

1) Second quarter report for each project is listed below.

a) Night Vision Goggle Lighting Requirement

To conduct a reduced version of the previously completed study using the modified directions to the subject/evaluator. This would provide FAA evaluators an objective tool/measurement of NVIS lighting incompatibility that they could compare to their current vision-based assessment. It is most likely that the vision-based assessment would always be necessary so that specific reflection issues or light leaks could be addressed and corrected; but the objective NVG light output measurement could serve as a supportive procedure. In addition, it is expected that AFRL/HECV personnel will test the NVG light output procedure in an actual cockpit environment, probably at AATC, Tucson, AZ.

Interagency Agreement signed on April 21st, 2004. Project will begin next month.

b) Simultaneous Non-interfering Operations - Quantify VFR Navigation Performance.

NASA Ames (Eye Tracking Task): Researcher accomplishments include: (1) progress in development of cockpit model (for scene camera-based head tracking), obtained graphical model of Bell Jet Ranger helicopter fuselage, created prototype instrument panel model, and created test sequences obtained for lens distortion calibration, (2) continued processing of flight data by re-interlacing of all flight data, and pupil tracking algorithm tested on additional sequences, (3) delivered an eye tracking video sequence from the UTSI flight - <http://www.hf.faa.gov/docs/508/docs/VF-PVFRflight.mpg>, and (4) second eye tracking recording system is complete.

Naval Postgraduate School (Virtual Model Task):

Task 5. Complete simulation environment

- Deliverables: Complete model and simulation environment, interfaces, flight models, and radio communications
- Progress: Complete

Task 6. Replicate actual flight study in simulated environment

- Deliverables: Complete virtual flight data set and analysis, validated simulation model
- Progress: Complete.

Task 7. Conduct simulation using multiple SNI scenarios provided by AAR-100

- Human performance and modeling data
- Not started. Awaiting AAR-100's input.

Task 8. Complete analysis and write report

- Report specifying the minimal RNP value for various SNI scenarios
- Not started. Follows task 7.

Indications are that there are minor risks to the activity being completed as planned. Due to the other purchase order entitled "Rotocraft Precision Visual Flight Rules Simultaneous Non-Interfering Human Factors Project" was not renewed, progress has halted. Researcher is awaiting input for task 7.

c) Rotocraft Precision Visual Flight Rules Simultaneous Non-Interfering Human Factors Project.

No work completed due to purchase order was not renewed.

FAA ASU posted a new market survey announcement on February 11th, 2004. The new announcement stated:

"The primary objective of this project will be to submit a final technical report that analyzes previously collected helicopter flight data. The secondary objectives will include support to the Naval Postgraduate School, Monterey CA by providing technical assistance in replicating the previous flight test environment in a virtual simulator, and providing technical assistance to the NASA Ames Research Center in the interpretation of the previously recorded helicopter flight test subject pilots' eye tracking data."

ASU anticipates award on new contract by June 2004.

Indications are that there are minor risks to the activity being completed as planned. Fortunately, the previous purchase order was three months ahead of schedule. AAR-100 anticipates that the new contract award will allow the contractee to complete the remaining tasks by September 2005. The September 27th, 2002 execution plan stated that the final report would be delivered by January 15th, 2005. After the contract is awarded, a new delivery date will be announced.

William K. Krebs